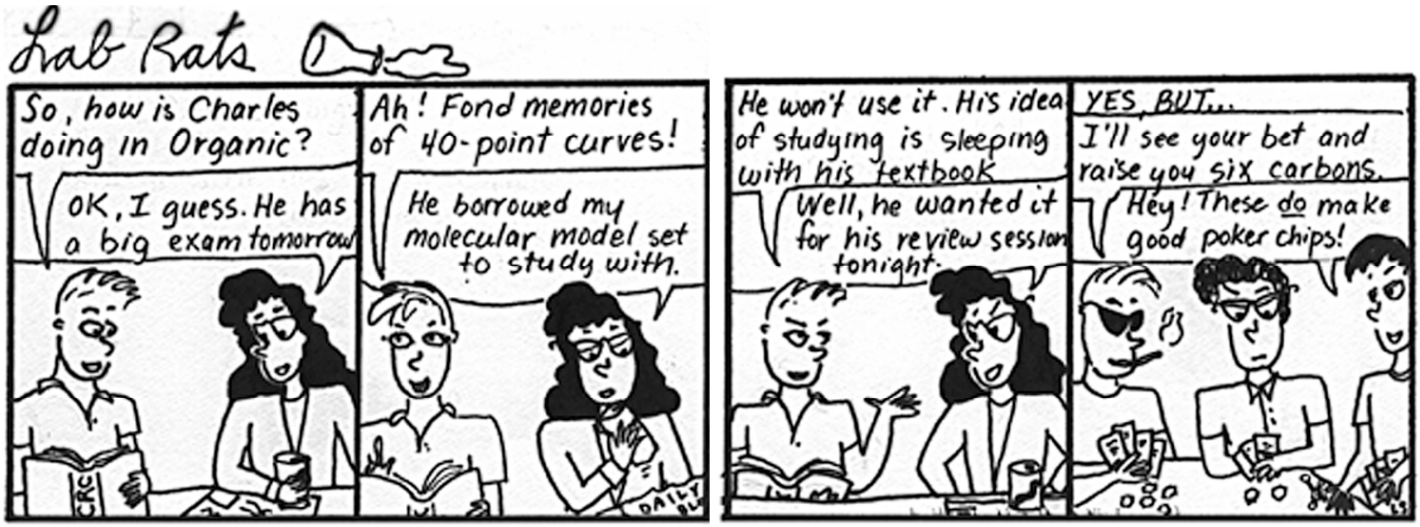
Chem 342

Exam 02
12 March 2004

NAME_____



Please read through each question carefully and answer in the spaces provided.

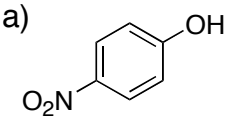
A good strategy is to go through the test and answer all the questions you can do easily. Then go back and tackle the more difficult problems.

Please make sure your structures are drawn clearly and indicate any stereochemistry with bold or dashed bonds.

Finally, think about what you know. Reason and common sense can often help you out.

Problem 1	9 pts _____	Problem 6	12 pts_____
Problem 2	9 pts _____	Problem 7	10 pts _____
Problem 3	15 pts _____	Problem 8	18 pts _____
Problem 4	9 pts _____		
Problem 5	18 pts _____	TOTAL	100 pts_____

1. Circle the alcohol in each pair below that would be the most acidic. (9 pts)

a) 

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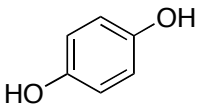
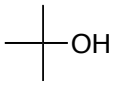


b) 

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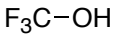
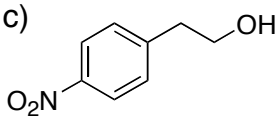


c) 

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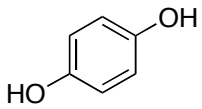
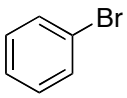


2. In each pair of molecules below, circle the structure that is most reactive toward electrophilic substitution. (9 pts)

a) 

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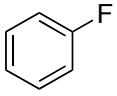
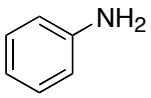


b) 

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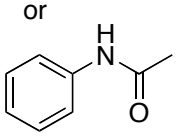
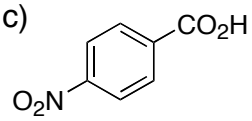


c) 

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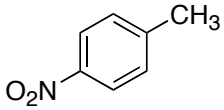
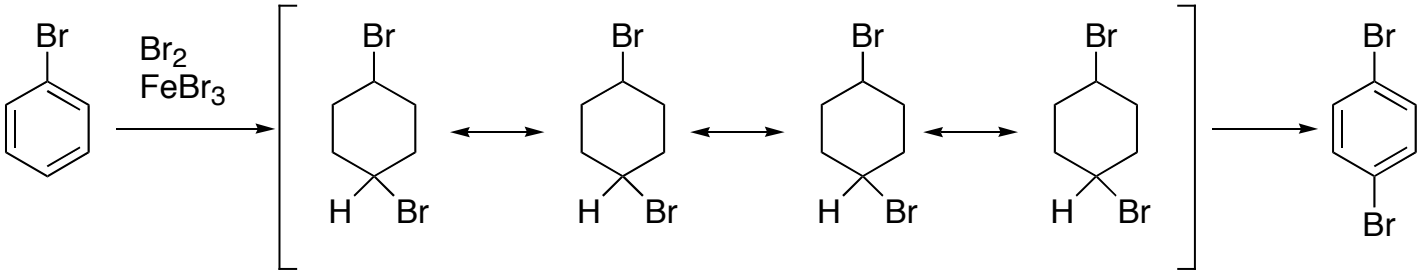
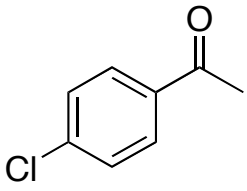
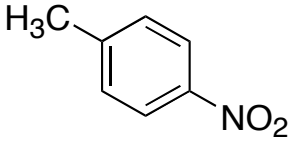


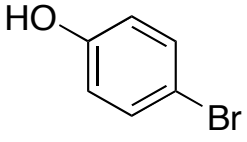
3. Bromine is an electron withdrawing group, however, it directs electrophilic substitution to the ortho and para positions. Fill in all the pi-ponds and formal charges for the resonance structures of the intermediate cation below. Circle the resonance form that explains why Br directs the group to the para position. (15 pts)



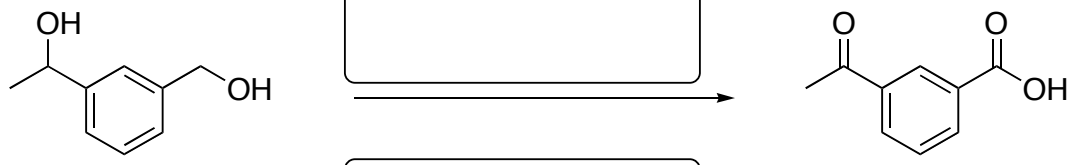
4. For each of the following structures, indicate which position on the ring electrophilic substitution would preferentially take place (you can circle the carbon). (9 pts)

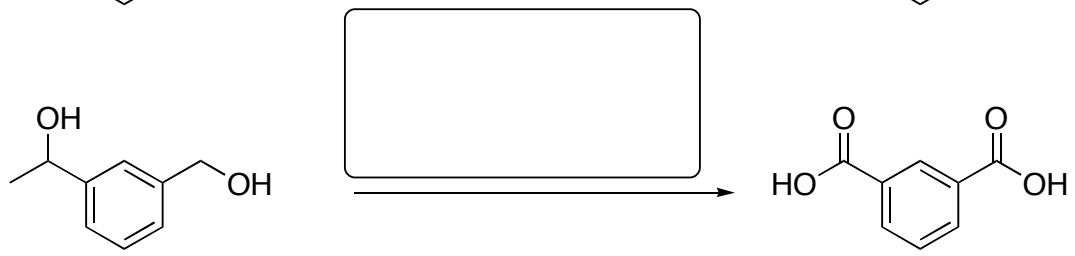


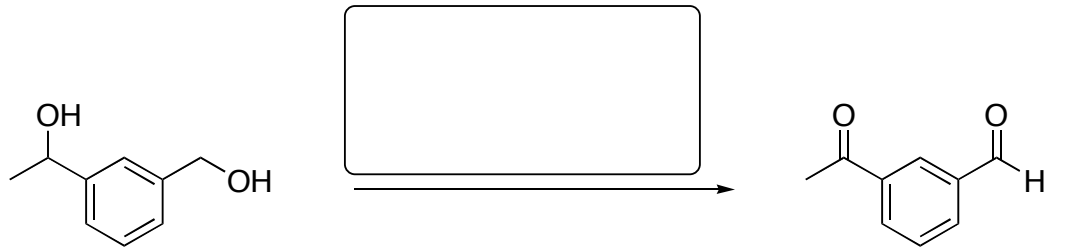


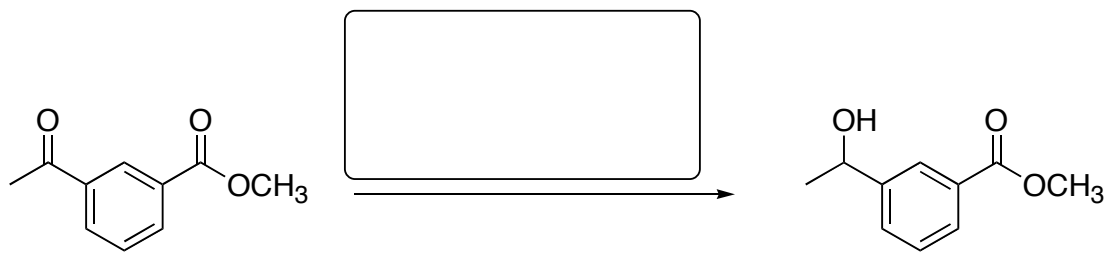


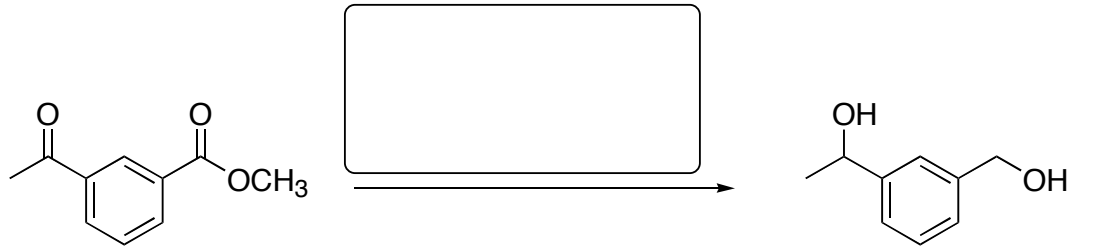
5. Provide the correct reagents necessary to carry out the following oxidation or reduction reactions. Examples of oxidizing and reducing agents: CrO_3, H_3O^+; PCC; $LiAlH_4$; $KMnO_4$; $NaBH_4$; mCPBA; DIBAL; H_2/Pd/C. (18 pts)

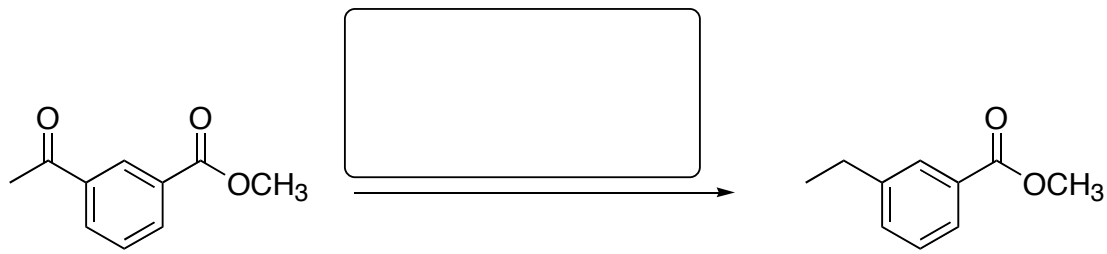
a) 

b) 

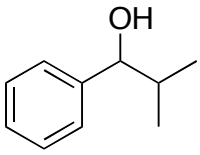
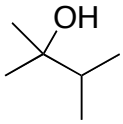
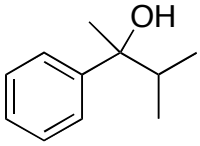
c) 

d) 

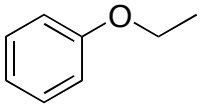
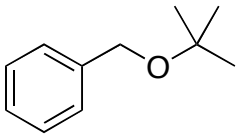
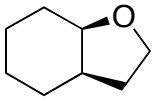
e) 

f) 

6. To prepare the alcohols below by nucleophilic addition to a carbonyl, what Grignard reagent and carbonyl compound would you start with? (12 pts)

		Grignard reagent	Carbonyl
a)	 from		
b)	 from		
c)	 from		

7. To prepare each of the following ethers by a Williamson ether synthesis, what organic bromide and what alcohol would you use as your starting materials? (10 pts)

		Bromide	Alcohol
a)	 from		
b)	 from		
c)	 from		(both in the same molecule)

8. Fill in the missing reagents and products in the following multistep synthesis. (18 pts)